City of Greensboro

Engineering Division

This booklet is provided to you by the Engineering Division of the Engineering & Inspections Department of the City of Greensboro.

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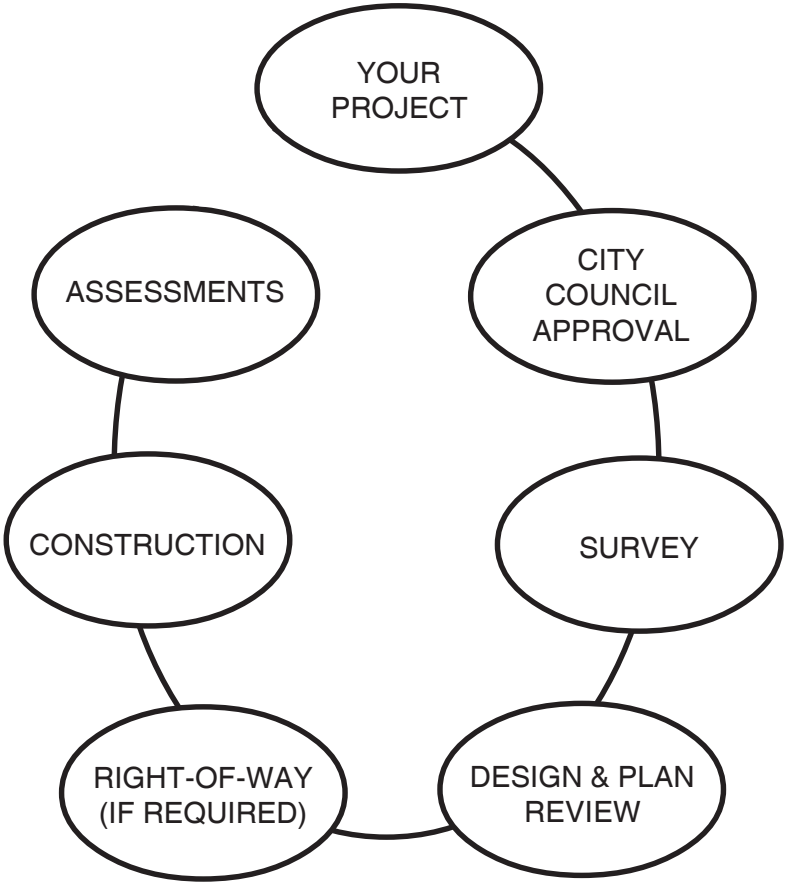

Flow diagram of your Public Improvement

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The City of Greensboro Engineering Division Office is located on the 3rd floor of ***Melvin Municipal Office Building****, 300 West Washington Street.*

INTRODUCTION

This booklet was organized to help you understand the development of the proposed improvement in your neighborhood or at the property you own. Your project involves many phases which lead to the final completion of the improvement. We hope you will understand any inconveniences which may occur during construction. Our staff is more than willing to listen to your concerns and will try to resolve any problems which may occur as a result of this improvement.

PROPOSED IMPROVEMENT

The request for a proposed roadway improvement may be generated either by **petition** from the majority (51% or greater) of property owners or by **a study** conducted by the City of Greensboro Department of Transportation (GDOT). A proposed water and/or sewer improvement may be generated either by **petition** from the majority of property owners or by **public necessity** as determined by the City Council and/or Guilford County Health Department.

BACKGROUND INFORMATION

Improvements are necessary to accommodate the growth and maintenance of our City. A site is identified for improvement when a preliminary investigation details the need for better service and how to provide those services.

The City of Greensboro Engineering Division provides water, sewer, roadway, and sidewalk improvements.

*The **City Council** makes the final approval on all Capital Improvement Projects.*

AUTHORIZATION

Public improvements that will be assessed to the owner must be submitted for authorization by the City Council. They in turn, appropriate the funds for the improvement. Proposed improvements are publicized, so that each citizen will have the opportunity to voice their opinions. Some improvements may be authorized by a memo from the Engineering & Inspections Director, where no assessment to the owner are involved.

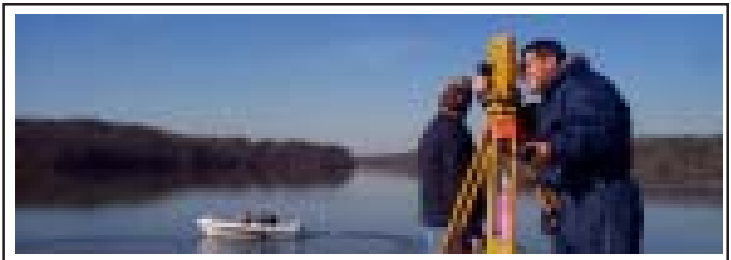
Once approved, the project is turned over to the **City of Greensboro Engineering Division**, this improvement will be developed from design to the completion of construction. Each owner and/or occupant

will be contacted at several phases of this improvement.

IMPLEMENTING THE IMPROVEMENT

PRELIMINARY SURVEY

The first phase of your project, is to collect data from existing records and from field surveys. Each project improvement is assigned to project management team, who will follow this project until completion. The City's Engineering Division may elect to use this project management team, or use one of it's Design Consultants for the design of the improvements. The engineer gathers information, by a field survey, to conduct an analysis of the area for improvement. Final plans indicate not only the surface conditions, but also the location of existing underground facilities and utilities.



Survey parties gather preliminary information for the design engineer.

During the initial survey, **wooden stakes** are sometimes placed along the sides of a street or property. In many cases, a survey may be required to locate your front and rear property irons. The location of each stake varies according to its purpose. Preliminary survey stakes may represent locations of property irons, alignments for roadway and/or water & sewer, or reference points. These stakes will be used throughout several phases of this improvement; therefore, it is important not to remove or alter them.

CREATING A PLAN DRAWING
Survey data collected is downloaded into a computer workstation for the creation of a plan drawing. The drawing illustrates the existing conditions of the area to be improved.

Each improvement is assigned to a design team using Computer Aided Drafting software to create a digital image of your project.

DESIGN APPLICATION
The engineer assigned to your improvement will conduct an analysis of the survey data and other information gathered during the research of this project. This is the design phase of your improvement. Your needs and concerns will weigh heavily in the design engineers decisions as well as the requirements set by the **City of Greensboro Roadway and Utility Design Standards**.

PLAN REVIEW
Each proposed improvement goes through many areas for review prior to completion of a final plan. Various departments within the City have opportunities to have input on the design of the improvement. The final drawing is prepared by the design engineer.

REQUEST FOR RIGHT-OF-WAY
If the improvement needs the requirement of more land for right-of-way than exists, our property management section will negotiate with each owner affected by the improvement.

REAL ESTATE NEGOTIATIONS
A real estate agent will contact the owner by a "**Notification Letter**" if there is a need for additional land for right-of-way. Right-of-way drawings will be prepared for documenting the purchase of the affected property for the City of Greensboro. Where easements or additional

lands are required for construction or installation, the property owner, will be compensated for land, trees, and shrubs located outside the City's existing right-of-way prior to the start of construction.

CONTRACT BID PROCESS

Once the design is completed, and any needed right-of-way acquired, the project is then ready to be placed into contract administration for the purpose of making the contract available to outside contractors. For the construction phase, the contract is normally awarded to the lowest bidder on the total project. Occasionally, by necessity, city crews will be involved in the construction of special projects.

CONSTRUCTION

Once the design is complete, the construction phase of your project is ready to begin. Whether a City crew or a private contractor does the improvement, all workers are made to understand our commitment to provide the best possible customer service.

Initially, your first sign of beginning this construction phase is the private utility company adjustments, which must be made prior to the actual start up of the City's operation. The City has a utility coordination section, within the Engineering Division, that will work with the private utility companies to make all the necessary adjustments.

Utility adjustments are the first sign that construction is beginning.

The design engineer has included a letter with this construction booklet that gives the approximate schedule for the contractor to move in with their equipment. Construction problems may vary with the individual project and the improvement being made. Further detailed explanations will follow in the next section of this booklet.

ROADWAY CONSTRUCTION

After the preliminary survey work is completed, the project is designed, all necessary rights-of-way are purchased, and private utilities (gas, cable, etc.) are moved or adjusted, it is time to begin construction on your new street. There are several phases of roadway construction: clearing, rough grading, slope adjustments, installation of the storm drainage system, final grading, construction of curb & gutter, asphalt paving, and finally, seeding, mulching and dressing up the entire disturbed area.

*Please **observe safety** when driving through a construction site.*

CLEARING

The first phase in the construction of your new roadway is the removal of obstructions in the path of the new roadway. Before this is done, a survey party will place wooden stakes with pink flagging, along the length of the project. These stakes will be marked "**clear**" and will indicate the limits of what the contractor is to clear. *Any trees or shrubs inside this area that you wish to save, should be transplanted to another area outside of the construction limits before work begins. It is not the responsibility of the contractor to transplant trees, shrubs or flowers.*

Of necessity, your mailbox may be moved to a temporary location, but, it will be reset for you permanently after construction is completed. If you have a fence that is located in the City's right-of-way the contractor will remove the fence and lay it back on your property to be reset by you after construction is completed. If the construction affects a fence that is located on your property, the City will reset your fence after construction is completed.

*Various **wooden stakes** will be placed along your improvement.*

GRADING & SLOPING

The final proposed grade for a roadway to be paved is determined by making the grade (height of top of curb) fit the abutting properties as well as possible and still providing safety and convenience to the traveling public. Immediately behind the curb, a 5 foot minimum width shoulder is required as shown on the typical street cross-section (see page 13). The slope of the bank that ties into your property normally starts at the back of this roadway shoulder and slopes toward the adjacent property at a slope ratio of 1 foot vertical to 3 feet horizontal until the new slope meets the existing ground.

This 3 to 1 slope is quite suitable for mowing and yard maintenance. If it is necessary that the slope area fall within your property, our real estate agents will work with you to obtain the necessary slope agreement prior to construction.

*Wooden stakes with **"pink flagging"** are marked for clearing.*

During construction of your roadway, various stakes will be placed on your property running parallel to the new street. Stakes marked "**grade**", tell the construction crew the alignment and the elevation of

Rough grading a new street.

the street at that point. After the rough grading is complete, stakes marked "**C&G**" are used for the final grading operation and provide the construction crew with information to set the exact alignment and elevation of the new curb & gutter.

Once the curb & gutter is installed, a stone bedding will be placed between the gutter sections. Eventually the asphalt travel surface will be laid over the stone bedding.

Curb & gutter being installed on a new street.

DRIVEWAYS

It is often necessary to adjust driveways, either up or down, to fit the new street elevation when the paving is complete. This adjustment will be performed by the paving contractor according to the following policy:

1) The City will construct a concrete apron from the curb to a point being a minimum of 5 feet back of the face of the curb, **provided a driveway exists** at the time of construction.

2) The portion of an existing driveway which is on the property will be adjusted to fit the new street grade at the property line with materials comparable to the existing driveway, at no added cost to the property owner.

3) Width of driveways may be from **10 feet to a maximum of 24 feet for single drives**. Where driveways are cut for water and sewer installation and no street paving is to be done, the driveway surface will be restored with materials comparable to those existing before the work began. There is no additional cost to the property owner for this work.

New driveway aprons require **7 days** for the concrete to cure. We apologize for the inconvenience, but it will be necessary to close your driveway for that period of time.

Typical driveway apron.

STORM DRAINAGE

Water is one of the most destructive forces found in nature. Because water can be so damaging, especially to roadways, it is necessary that a well designed storm drainage system be designed to handle the rain water that falls on and adjacent to the roadway. Curb inlets, storm manholes and storm sewer pipe systems are designed to pick up rain water that falls on the street as well as water that flows in ditches and crosses

The City will participate with installing storm sewer pipe on your private property, if the property owner pays the cost of materials.

roadways. The water in these systems is transported, as close as possible, to the natural drainage route and released into the existing natural drainage pattern once it leaves the roadway. This release of water at its natural discharge point is required by the **State of North Carolina Riparian Laws**. If for some reason the pipe system must protrude onto your property, our real estate agent will be in contact with you to obtain a drainage easement.

Where street drainage is released onto private property, the City of Greensboro will participate to pipe the ditch, if the property owner desires. Under the **storm sewer participation policy**, the property owner pays the cost of materials and the City provides the labor and equipment to install the pipe. This usually works out to be a 50/50 proposition. More information on this policy can be obtained by calling the City's storm drainage engineer with Storm Water Management at (336)373-2055.

A storm sewer pipe being installed.

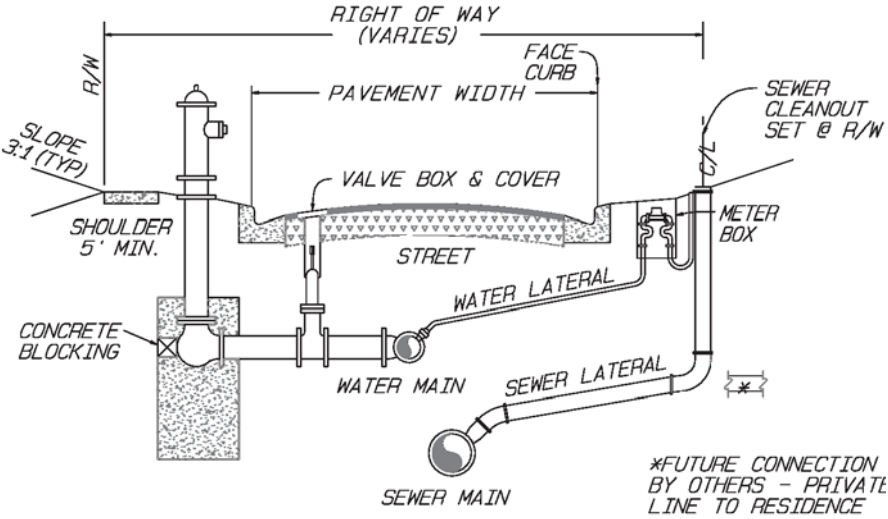
YOUR COMPLETED PROJECT

After the construction of the roadway is complete, construction crews will clean and dress up the shoulders, the slopes and any other areas disturbed. Seeding and mulching will follow in order to stabilize disturbed areas. At this time, the City inspector will make his final inspection to make sure all minor problems are dealt with. You will be notified by the project engineer when the project is complete. Enclosed with your "**letter of completion**" you will find a "**question and comments card**". We ask that you take a moment to complete and return the card so that we may serve you better. If you feel there is something that has been overlooked, this would be the time to notify the City's design engineer at (336)373-2302.

Increased traffic requires widening and intersection improvements.

The final product. The target of all our efforts.

The example below is a typical cross-section of your street showing the roadway, sidewalk, water and sewer mains. The water and sewer laterals are attached to their respective mains and provide service to your property line. Fire hydrants are also attached to the water main and provide you with fire protection. All of these facilities are constructed inside the right-of-way limits of the roadway.



Example of a typical street cross section showing connections to city services.

WATER AND SEWER CONSTRUCTION

DESIGN

Water and sewer mains are usually installed in or along the edge of an existing street at a depth that meets three main design criteria: good engineering design, practical considerations, and economic considerations. Water mains are normally designed in order to give all adjacent property owners access to water service while providing improved fire protection and water distribution.

Sewer mains in most cases are designed to provide service to the ground floor of all existing dwellings. There can be exceptions where the depth of the lot is greater than the City's design standard will permit. The design engineer will make every effort to serve all basements, if such a design will not violate the three design criteria mentioned above.

Basements may be served for sewer if the design does not violate the design criteria.

In most cases, water and sewer lines are installed within the existing street right-of-way. Many times in order to provide sewer service an outfall will be required. Outfalls are cross country sanitary sewer mains that are installed across property rather than in the street right-of-way.

Sewer cleanouts are required on all installations.

In order for all property owners to gain access to City water and sewer services, laterals (service lines) will be installed from each main to the right-of-way line. The location for such laterals is determined by you, the property owner, or your plumber. The City water and sewer inspector will leave a **wooden stake** and an accompanying **letter** explaining the placement of the stake and construction sequence. The owner or a licensed plumber must extend the water and sewer service from the lateral at the right-of-way line to the plumbing system in your home.

If the street is to be paved following water and sewer installation, laterals will be installed to all vacant lots and it will be the property owner's responsibility to decide on the lateral location. If the owner of an existing dwelling, or a vacant lot does not indicate where the laterals are to be located, then, the inspector will select the location. The

inspector selects the location only after every effort has been made to contact the property owner during the early stages of the construction phase of the project.

CLEARING AND GRUBBING

A minimal amount of clearing and grubbing is required for the installation of water and sewer mains along existing streets. However, if an outfall is to be installed, a substantial amount of clearing and grubbing may be required within an acquired utility easement.

CONSTRUCTION STAKING

The operations engineer will notify the design engineer when the construction is scheduled. **Wooden stakes** are placed by the survey crew to locate the alignment of the water and sewer mains and to locate hydrants, valves, and manholes. The stakes enable the contractor to install these items at the proper location as specified on the plans. It is important and should be emphasized that these stakes should not be disturbed if at all possible.

A sewer improvement under construction.

Installation of sewer main.

INSTALLATION OF MAINS

The installation of mains, whether it is water or sewer, may consist of trenching, laying the main, installing hydrants and valves, installing laterals (services), tying into active mains, backfilling and compacting trenches. Please understand there will be temporary inconveniences; however, these inconveniences will be kept to a minimum whenever possible.

SEEDING AND CLEANUP

After all construction and testing has been completed, the entire area will be cleaned up and seeded. **Cleanup** involves removing any debris and materials that are no longer useful to the project and placing items (i.e. mailboxes, etc.) back that were removed for construction. **Seeding and mulching** includes any necessary dressing up of disturbed areas. This phase can be delayed due to weather conditions. A short period of time may be required to allow the soil to dry so that the construction site may be left in the best possible condition. If you have any concerns about this or any phase of the project, please do not hesitate to contact the City's design engineer at (336)373-2302.

SIDEWALK CONSTRUCTION

INSTALLATION OF SIDEWALK

New sidewalks built parallel to existing streets, in the majority of installations; construction may be in conjunction with a roadway project or as a stand-alone project. A stand-alone project is either the result of a successful petition by property owners or a memo from the Greensboro Department of Transportation (GDOT) to satisfy the goals of the City's Walkability Policy. The City assumes the total cost and there are no assessments levied to property owners for any of these sidewalk installations. Additional right-of-way and/or easements will be acquired, if necessary, prior to construction of the sidewalk.

*Sidewalk Improvements provide **safety** to the pedestrian.*

A standard installation of sidewalk involves a minimal amount of construction. Along most residential streets, a 5 foot wide sidewalk is typically installed. The goal is a 36 inch wide planting strip that will be left between the sidewalk and the back of the curb. For drainage purposes, the top of the sidewalk is built above or level with the top of the curb with a slight slope to allow water to drain to the street. Unlike roadway construction, sidewalk improvements are graded and installed in one operation. After the concrete has cured, construction crews return to slope the banks where necessary, fill in low areas, and to seed and dress the disturbed areas.

WHEELCHAIR RAMPS

Title II of the Americans with Disabilities Act (ADA) requires accessibility in the construction and operation of pedestrian facilities. Wheelchair ramps are expressly required in Title II. All new and altered streets with sidewalks must contain compliant curb ramps. To ensure the City of Greensboro complies with these standards, your project will reflect these requirements for handicapped individuals.

ASSESSMENTS

Assessments are charges for water, sewer, and roadway (curb & gutter) improvements authorized by City Council. These cost are only a portion of the costs for making a particular improvement. The remainder of the costs are assumed by the City. The amount assessed is determined by multiplying the entire property frontage (number of feet that abuts the right-of-way) by the rate per foot as set in the City Council resolution.

Certain allowances will be considered when the property is a corner lot. The property is subject to an exemption if improvements are made to the front (shortest side) and to the side of the property. An area zoned **residential** may receive a maximum exemption of 150 feet for water and sewer and up to 60 feet for paving (curb & gutter). Property zoned **commercial** (or other than residential) may receive a maximum exemption of 100 feet for water and sewer, but no exemption on paving (curb & gutter) is allowed.

Generally, the assessment charges are levied within several months after final completion of the construction contract. Charges and fees will be computed by the City's assessment section. The City Council will confirm the assessment roll prior to mailing the bill. Upon receipt of the bill, the property owner can make payment in full within 90 days or may select to pay by installments.

Notes & Questions

Engineering Division: **(336)373-2302**
Design Section
Property Management
Assessments

Storm Water Mgmt/Storm Drainage: **(336)373-2055**

TDD (for hearing impaired) (336)333-6930